

## Air Quality Terms And Abbreviations

*Automobiles on the road in the U.S. today are responsible for approximately 30% of the nitrogen oxide (NO<sub>x</sub>) pollution that causes formation of smog. Although cars are cleaner today than they were 20 years ago, people are driving more than ever before. The number of miles driven by Americans has risen more than 150% since 1970.*

**Attainment** - Areas meeting the NAAQS and may be designated as nonattainment by EPA

**Baseline** - The year designated by EPA to be used as a comparison for future conformity analysis. The 8-hour standard uses 2002 as the baseline year.

**Budget** - The amount of pollution allowed (tons/day) to meet the NAAQS. Existing budgets were established using 1996 or earlier HPMS data. Budgets are established by DAQ for all sectors: Mobile (Highway), Mobile-Off Road, Point, and Area. Budgets are included in the SIP. KYTC works with DAQ to develop 8-Hour Ozone and PM<sub>2.5</sub> budgets.

**CAAA** - Clean Air Act Amendment 1990-Legislation that set federal air quality standards.

**Conformity** - Requirement of CAAA to ensure that new transportation investments do not jeopardize air quality in nonattainment/maintenance areas or worsen air quality in nonattainment areas. Conformity is a series of calculations, using transportation data and EPA's emissions model (currently MOBILE6.2). Conformity demonstrates that future transportation plans created emissions will be less than the budget or baseline.

**DAQ** - The Kentucky Division for Air Quality in the Environmental and Public Protection Cabinet (EPPC)

**EPA** - The United States Environmental Protection Agency

**FHWA** - The Federal Highway Administration - a federal agency under the United States Department of Transportation

**HPMS** - Highway Performance Management System-A program developed by FHWA to inventory the VMT statewide and project future travel. Division of Planning develops the annual submittal to FHWA. The HPMS data now includes updates for GPS and 2000 Census.

**Hydrocarbons (HC or VOC)**- Chemical compounds that contain hydrogen and carbon. Sometimes called volatile organic compounds (VOC). Most motor vehicles and engines are powered by hydrocarbon-based fuels such as gasoline and diesel. Hydrocarbon pollution results when unburned or partially burned fuel is emitted from the engine as exhaust, and also when fuel evaporates directly into the atmosphere. Hydrocarbons include many toxic compounds that cause cancer and other adverse health effects.

Hydrocarbons also react with nitrogen oxides in the presence of sunlight to form ozone.

**LRTP** - Area Long-Range Transportation Plan - 20 to 30 years out

**Maintenance** - Areas that have been designated as nonattainment by EPA for failure to meet a NAAQS may later be re-designated as attainment with a maintenance plan when they are no longer violating the standard. These areas are referred to as maintenance areas.

**Maintenance Plan** - Areas that have been designated as nonattainment, but have since demonstrated that they are meeting the standard, can be redesignated by EPA and the state air agency as "attainment with a maintenance plan". The maintenance plan must show how the area will continue to meet the standard and must contain "budgets" or maximum mobile source emissions for future years for the pollutants in question.

**Mobile Source** - vehicles, engines, and other machines that move, such as cars, boats, and lawnmowers are collectively known as mobile sources. Mobile sources are further divided into **on-road** and **nonroad** or **off-road**. Regulations differ for the two categories.

**MPO** - Metropolitan Planning Organization- Cities over 50,000 population. KY has nine.

**MSA** - Metropolitan Statistical Area-Generally, much larger than the MPO area, especially for the TMAs.

**NAAQS** - National Ambient Air Quality Standards

- **8-Hour Ozone Standard** - Episodic monitor regulation for measuring air quality. Uses an ongoing 8-hour average of monitor readings for measuring ground level ozone. Areas are designated as nonattainment areas by violating the standard. A violation is defined by exceeding the 0.085ppm threshold, which uses a three-year average of the fourth highest reading. Four Kentucky areas are designated nonattainment under the 8-Hour ozone standard.
- **1-Hour Ozone Standard** - Episodic monitor regulation for measuring ground level ozone. Uses one hour average of monitor readings. End June 15, 2005 – replaced by 8-Hour Ozone standard.
- **PM2.5 Standard** - Episodic monitor regulation for measuring fine particulate matter smaller than 2.5 microns. Includes a 24-hour as well as an annual standard. Kentucky counties violating this standard are violating the annual standard.

**Nitrogen Oxides (NO<sub>x</sub>)** - A group of highly reactive gases that contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. The common pollutant nitrogen dioxide (NO<sup>2</sup>) can often be seen combined with particles in the air as a reddish-brown layer over many urban areas. Nitrogen oxides are formed when the oxygen and nitrogen in the air react with each other during combustion. The formation of nitrogen oxides is favored by high temperatures and excess oxygen (more than is needed to burn the fuel). The primary sources of nitrogen oxides are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels.

**Nonattainment** - Areas failing to meet the NAAQS and may be designated as nonattainment by EPA

**Ozone** - A gaseous molecule that contains three oxygen atoms (O<sup>3</sup>). Ozone can exist either high in the atmosphere, where it shields the Earth against harmful ultraviolet rays from the sun, or close to the ground, where it is the main component of smog. Ground-level ozone is a product of reactions involving hydrocarbons and nitrogen oxides in the presence of sunlight. Ozone is a potent irritant that causes lung damage and a variety of respiratory problems. SIP - (State Implementation Plan)-Quantifies the air quality budgets and establishes controls measures for all sources.

**Particulates or Particulate Matter (PM)** – Particles or droplets in the air

**TIP** – Transportation Improvement Program – short term transportation plan – 3 to 5 years out

**TMA** - Transportation Management Area-Cities over 200,000 population. KY has four.

**Transport** - When pollution travels in the atmosphere from its source to other locations due to weather patterns or geography. This is a common phenomenon impacting air quality readings in many Kentucky counties and across the eastern US.

**VMT** - Vehicle Miles Traveled